This listing of claims replaces all prior versions and listings of claims in this application.

LISTING OF CLAIMS:

1. (Currently Amended) A method for the preparation of a polymer electrolyte electrochemical cell using an electrolyte precursor, said precursor comprising one or more solvents, one or more salts and a polymer which dissolves in the solvent at a first temperature ~~(T_{dissol})~~ , T_{dissol}, and which is capable of forming a gel on subsequent cooling following heating to a second temperature ~~(T_{gel})~~, T_{gel}, wherein T_{dissol} ~~being~~ is lower than T_{gel}, which method comprises:

heating the electrolyte precursor to T_{dissol};

(a) optionally cooling the electrolyte precursor;

(b) incorporating the electrolyte precursor into the electrochemical cell;

(c) heating the electrochemical cell to T_{gel}; and

(d) cooling the polymer electrochemical cell to ambient temperature to bring about gelling of the polymer electrolyte.

2. (Currently Amended) The ~~A~~ method according to claim 1, in which said polymer is a homopolymer or copolymer selected from the group of monomers consisting of vinyl fluoride, vinylidenefluoride, trifluoroethylene, tetrafluoroethylene and hexafluoropropylene.

3. (Currently Amended) The ~~A~~ method according to claim 1, in which said polymer is a copolymer of vinylidenefluoride and hexafluoropropylene.

4. (Currently Amended) The ~~A~~ method according to claim 3, in which said copolymer of vinylidenefluoride and hexafluoropropylene has a molecular weight in the range ~~50.000-500.000~~, 50,000-500,000 ~~more preferably 100.000-300.000~~, and a weight ratio of vinylidenefluoride and hexafluoropropylene in the range 80:20 to 90:10.

5. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrolyte comprises one or more solvent(s) selected from the ~~groups~~ group consisting of ~~(a) to (e)~~:

(a) alicyclic carbonates represented by the following general formula:

$$-C(=O)=O-CR_1R_2-[CR_3R_4]_m-CR_5R_6-O-,$$

wherein each of R_1, R_2, R_3, R_4, R_5 and R_6 independently represents hydrogen or a C_1-C_4 alkyl group and m is 0 or 1~~, preferably ethylene carbonate or propylene carbonate~~;

(b) aliphatic carbonates represented by the general formula $R_7[OC(O)]_pOR_8$, wherein each of R_7 and R_8 independently represents a C_1-C_4 alkyl group, and p is an integer equal to 1 or 2~~, preferably dimethyl carbonate or diethyl carbonate~~;

(c) lactones in the form of cyclic esters represented by the general formula:

$$-C(=O)-CR_9R_{10}-CR_{11}R_{12}-[CR_{15}R_{16}]_r-CR_{13}R_{14}-O-$$

wherein each of R_9, R_{10}, R_{11}, R_{12}, R_{13}, R_{14}, R_{15} and R_{16} independently represents hydrogen or a C_{1-2} alkyl group and r is 0 or 1~~, preferably γ-valerolactone and/or γ-butyrolactone~~;

(d) esters represented by the formula $R_{17}[C(O)]OR_{18}]_t$, wherein each of R_{17}, R_{18} and R_{19} independently represents hydrogen or a C_1-C_2 alkyl group, and t is 0 or an integer equal to 1 or 2~~, preferably an acetate, more preferably (2-methoxy-ethyl)-acetate or ethyl acetate~~; and

(e) glymes represented by the general formula $R_{20}O(R_{21}O)_nR_{22}$, in which each of R_{20} and R_{22} independently represents a C_{1-2} alkyl group, R_{21} is -$(CR_{23}R_{24}CR_{25}R_{26})$- wherein each of R_{23}, R_{24}, R_{25} and R_{26} independently represents hydrogen or a C_1-C_4 alkyl groups, and n is an integer from 2 to 6~~, preferably 3, R_{20} and R_{22} preferably being methyl groups, R_{23}, R_{24}, R_{25} and R_{26} preferably being hydrogen or C_1-C_2 alkyl groups, more preferably hydrogen~~.

6. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrolyte comprises one or more salts selected from the group consisting of alkali metal or ammonium salts of ClO_4, CF_3SO_3, AsF_6, PF_6 ~~or~~ and BF_4~~, preferably $LiPF_6$ and $LiBF_4$~~.

7. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrolyte comprises solvent(s), salt(s) and ~~polymer(s)~~ polymer in the compositional range from 63:25:12 to 94:5:1 percent of the total weight of the electrolyte system~~, preferably in the compositional range from 70:20:10 to 90:8:2 percent of the total weight of the electrolyte system, more preferably in the compositional range from 75:17:8 to 88:8:4 percent of the total weight of the electrolyte system~~.

8. (Currently Amended) The ~~A~~ method according to claim 1 in which the electrolyte is confined in a separator consisting of a porous structure made of a polymer~~, preferably of polyethylene, polypropylene, polycarbonate or cellulose~~.

9. (Currently Amended) The ~~A~~ method according to claim 8, in which the separator has a woven or non-woven structure having a pore size in the range of 10 x 10 nm to 1 x 1 mm.

10. (Currently Amended) The ~~A~~ method according to claim 8, in which the separator has a thickness of 10-100μm~~, preferably 10-25μm~~.

11. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrochemical cell has a negative electrode structure comprising one or more compounds selected from the group consisting of graphite, coke, mesocarbon microbeads, carbon black, aluminum, silicon ~~or~~ and tin, ~~preferably graphite, mesocarbon microbeads, coke or carbon black, more preferably graphite or mesocarbon microbeads,~~ and a positive electrode structure comprising one or more compounds selected from the group consisting of lithium manganese oxides, lithium cobalt oxides and lithium nickel oxides~~, preferably lithium manganese oxides, more preferably lithium manganese oxide $LiMn_2O_4$ of spinel structure~~.

12. (Currently Amended) The ~~A~~ method according to claim 1, in which the dissolution temperature T_{dissol} is in the range 45-80°C~~, preferably 60-80°C, more preferably 65-75°C,~~ and the gelling temperature T_{gel} is in the range 75-100°C, ~~preferably 80-90°C,~~ with the proviso~~,~~ that T_{gel} should be higher than T_{dissol}.

13. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrochemical cell is wound prior to electrolyte impregnation.

14. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrolyte incorporation is carried out by pouring or injection.

15. (Currently Amended) The ~~A~~ method according to claim 1, in which the electrodes display such a porosity which is such as to allow diffusion of a relatively solvent-rich electrolyte phase into the pores of the electrodes, leaving a relatively polymer-rich electrolyte phase in the volume between the electrodes.

16. (Currently Amended) The ~~A~~ method according to claim 1 wherein the gap between electrode laminates of the electrochemical cell is smaller than at least the largest polymer particles so that the electrolyte in the vicinity of the edge of the laminate and outside the laminate contains a larger amount of polymer than the electrolyte between the electrodes.

17. (Currently Amended) An electrochemical cell having a negative electrode structure comprising one or more compounds selected from the group consisting of graphite, coke and mesocarbon microbeads, and a positive electrode structure comprising one or more compounds selected from the group consisting of lithium manganese oxides, lithium cobalt oxides and lithium nickel oxides, ~~preferably lithium manganese oxide,~~ and a gelled polymer electrolyte, 1-12% by weight~~, preferably 4-8% by weight,~~ of the total weight of the electrolyte being said polymer, ~~which is selected from the group of homopolymers and copolymers~~ wherein said polymer is a homopolymer or copolymer selected from the group of monomers consisting of vinyl fluoride, vinylidenefluoride, trifluoroethylene,

tetrafluoroethylene and hexafluoropropylene, ~~preferably a copolymer of vinylidenefluoride and hexafluororopreylene,~~ said electrochemical cell being obtained by ~~or being obtainable by~~ a method ~~as claimed in claim 1~~ comprising

(a) heating an electrolyte precursor, comprising one or more solvents, one or more salts and a polymer which dissolves in the solvent at a first temperature, T_{dissol}, and which is capable of forming a gel on subsequent cooling following heating to a second temperature, T_{gel}, to the temperature T_{dissol}, wherein T_{dissol} is lower than T_{gel};

(b) cooling the electrolyte precursor

(c) incorporating the electrolyte precursor into the electrochemical cell;

(d) heating the cell to T_{gel}; and

(e) cooling the polymer electrochemical cell to ambient temperature to bring about gelling of the polymer electrolyte.

18. (New) The method according to claim 4, wherein the copolymer of vinylidenefluoride and hexafluoropropylene has a molecular weight in the range of 100,000-300,000.

19. (New) The method according to claim 5, wherein the electrolyte comprises one or more solvents selected from the group consisting of

(a) alicylic carbonates selected from the group consisting of ethylene carbonate and propylene carbonate;

(b) aliphatic carbonates selected from the group consisting of dimethyl carbonate and diethyl carbonate;

(c) lactones selected from the group consisting of γ-valerolactone and γ-butyrolactone;

(d) esters selected from the group consisting of (2-methoxyethylacetate) and ethylacetate; and

(e) glymes wherein R_{20} and R_{22} are methyl and R_{23}, R_{24}, R_{25} and R_{26} are hydrogen.

20. (New) The method according to claim 7, wherein the electrolyte comprises solvent(s), salt(s) and polymer in the compositional range 75:17:8 to 88:8:4 percent of the total weight of the electrolyte system.

21. (New) The method according to claim 8, wherein the separator consists of a porous structure made of a polymer selected from the group consisting of polyethylene, polypropylene, polycarbonate, and cellulose.

22. (New) The method according to claim 10, wherein the thickness is 10-25 μm.

23. (New) The method according to claim 11, wherein

the negative electrode structure comprises one or more compounds selected from the group consisting of graphite and mesocarbon microbeads; and

the positive electrode structure comprises $LiMn_2O_4$ of spinel structure.

24. (New) The method according to claim 12, wherein T_{dissol} is in the range 65-75°C, and T_{gel} is in the range of 80-90°C.

25. (New) The method according to claim 6, wherein the electrolyte comprises one or more salts selected from the group consisting of $LiPF_6$ and $LiBF_4$.

26. (New) The electrochemical cell according to claim 17, wherein the positive electrode structure comprises lithium magnesium oxide.

27. (New) The electrochemical cell according to claim 17, wherein the polymer is a copolymer of vinylidenefluoride and hexafluoropropylene.

28. (New) The electrochemical cell according to claim 17, wherein the polymer is 4-8% by weight of the total weight of the electrolyte.